

Using Prime Factorization to find
Common factors

Find Common Factors of:

36 and 20

OLD WAY:
List them

36 $\{1, 2, 3, 4, 6, 9, 12, 18, 36\}$

20 $\{1, 2, 4, 5, 10\}$

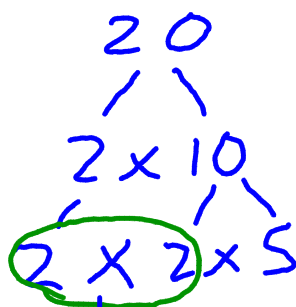
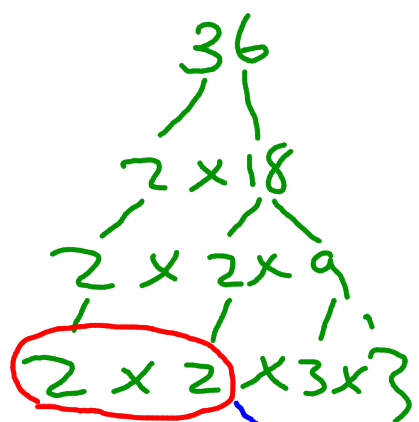
all factors
of 36
(36 is not
a decimal)

all factors
of 20

2 and 4 appear in both

\therefore 2 and 4 are common factors.

NEW WAY! PRIME FACTORIZATION



STEP 1: DO THE P.F. ✓

2: WHAT P.F.'s appear in both {2 x 2}

3: List all prime Factors {2}

Multiply all combos of prime factors {2 x 2 = 4}

2 and 4
are the
common
factors.

Ex.2. Find all common factors for 60 and 100.

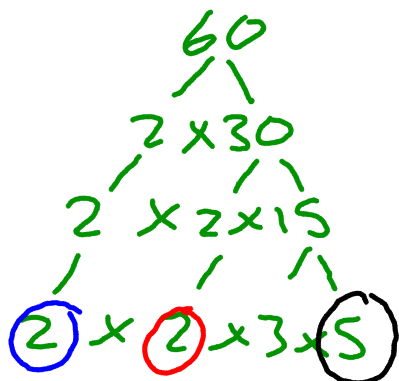
OLD WAY

60 $\{ \underline{1}, \underline{2}, 3, \underline{4}, \underline{5}, 6, \underline{10}, 12, 15, \underline{20}, 30, 60 \}$

100 $\{ \underline{1}, \underline{2}, \underline{4}, \underline{5}, \underline{10}, \underline{20}, 25, 50, 100 \}$

C.F. are 2, 4, 5, 10, and 20

NEW WAY



Common Prime factors are 2, 2 and 5

Common factors are:

These are
all the combos
of 2, 2, and 5
That can be
multiplied together.

$$\begin{aligned} 2 \times 2 &= \\ 2 \times 5 &= \\ 2 \times 2 \times 5 &= \end{aligned}$$

} from Prime
Common

So

are common factors.

Homework.

Use Prime Factorization to
Find the common factors of:

a) 36 and 60

b) 32 and 90

c) 16 and 68